

Community Nurse Requests for Home Medicines Review Referral – Systems Development and Barrier Identification

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STATEMENT OF ORIGINALITY

The work presented within this thesis is, to the best of my knowledge, original, except as acknowledged in the text. None of the material described within has previously been submitted, either in whole or in part, for a degree at the University of Queensland or at any other university.

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ABSTRACT

Aim

To develop a systems based approach for community nurse requests for home medicines review (HMR) referral, measure the degree of uptake of these requests for HMR, and identify barriers to uptake of HMR referrals as part of the developed system.

Method

An area of southern Brisbane suburbs was selected encompassing three Divisions of General Practice and three Blue Care nursing centres. Stakeholder meetings involving interested parties were convened to determine process issues. Patients identified as having potential medication related problems were recruited by Blue Care nurses and tracked through the normal HMR process. Focus groups were conducted with each professional group involved in the project (pharmacists, general practitioners (GPs) and Blue Care nurses) to discuss and identify barriers in the project and also general barriers to HMR uptake in the community.

Results

Five requests for HMR referral were completed and sent to the GP during the seven months of this study. Of these, three (60%) HMR referrals were generated by the GP and sent to the pharmacy. One referral was withdrawn by the GP and two referrals (40%) resulted in a completed HMR. Two focus groups each were conducted with Blue Care nurses and GPs and one with pharmacists.

Conclusion

The HMR program remains in its infancy with much untapped potential. Patient and health professional acceptance of the program remain key barriers to its continued uptake and success.

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LIST OF PUBLICATIONS

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Community Nurse Referral for HMR – Will it Work?

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LIST OF ABBREVIATIONS

ADR	adverse drug reaction
AMA	Australian Medical Association
AP	accredited pharmacist
Bayside	Bayside General Practice Division
BISDIV	Brisbane Inner South Division of General Practice
Brisbane South	Brisbane South Division of General Practice
CEO	chief executive officer
CNS	central nervous system
CP	community pharmacist
Division	Division of General Practice
DMMR	Domiciliary Medication Management Review (original name for HMR)
DON	director of nursing
DVA	Department of Veterans' Affairs
GP	general practitioner
Guild	Pharmacy Guild of Australia
HIC	Health Insurance Commission
HMR	home medicines review
NHS	National Health Service (UK)
PSA	Pharmaceutical Society of Australia
RN	registered nurse
UK	United Kingdom
UQ	University of Queensland
US or USA	United States of America

INTRODUCTION

Health budgets worldwide are under constant pressure yet continue to expand at an alarming rate. In this climate cost savings are continually being sought. Iatrogenesis is an area that can be easily targeted to reduce health costs while at the same time providing patient benefits through reduced error and medical visits/hospitalisations. The Australian Council for Safety and Quality in Healthcare (1), the US Institute of Medicine (2) and the UK Department of Health (3) have identified the potential financial and patient benefit savings which can be realised if a systematic approach is taken to errors in healthcare.

While governments and other organisations that fund the healthcare system predominantly concentrate on the fiscal aspect of any savings, the patients, or consumers, of the healthcare system are the ultimate beneficiaries of error reduction. Improved patient safety will flow through to reduced hospital stays and less frequent repeat visits to hospitals and other healthcare facilities. This, in turn, will further drive expenditure down thereby allowing a greater capacity in the healthcare system. However, “siloism” has long been a problem in government circles, as each program appears only to be interested in its own outcomes. This narrow focus inhibits cross-links between programs to improve services and therefore producing the best outcomes for both the funder (government) and the consumer (patient).

A study investigating the incidence and severity of adverse events after hospital discharge by telephone survey of 400 recently discharged patients found an adverse event occurred in 76 (19%) of patients (4). Of these adverse events, 50 (66%) were due to an adverse drug event and a panel of internal medicine specialists classified 31

(62%) as either preventable or ameliorable. “Ameliorable” was used to describe events whose severity could have been reduced if different actions or procedures had been taken or followed. Poor communication was found to be the main causal contributor to adverse events, both between the hospital and primary health care providers and with the patient themselves. Four system issues were identified as requiring improvement including patient education about drug and other therapies and monitoring of drug and other therapies after discharge. One recommendation to reduce adverse drug events was telephone contact within 5 days of discharge with a clinical pharmacist.

Medicines are a part of daily life for many Australians. People aged over 65 years comprise 13% of the Australian population (5), yet consume 35% of the health expenditure (6). When broken down into its component costs, this comprises 35% of acute hospital services, 31% of pharmaceutical services and 24% of medical services. It is considered that lifestyle modification could prevent or postpone approximately 80% of the health problems associated with ageing in Australia, especially when cardiovascular diseases and cancers account for over 60% of the disease burden in those aged over 65 years (6).

The elderly are more likely to use medication and also more likely to be exposed to polypharmacy. As people age, they also become more sensitive to medications for a range of reasons:

- Reduced renal function;
- Decreased lean muscle mass;
- Increased body fat;

- Reduced total body water;
- Altered receptor sensitivity; and
- Increased sensitivity to drugs acting on the CNS (7).

Consequently, this population is more likely to experience an adverse medicine event.

A range of initiatives were sought by the Australian Government to reduce the ageing burden on the healthcare system while at the same time promoting preventative strategies to promote lifestyle changes and optimise care.

Medication review

Medication problems in Australia were estimated in 1999 to result in at least 80,000 hospital admissions with an associated cost of approximately \$350 million (8). Other studies have shown between 1.7 and 16.8% of hospital admissions to be due to drug related causes (9-15), and up to 24% when specifically investigating an elderly population (16). One study further categorised adverse drug reactions (ADR) at admission and found that while 7.2% of patients were admitted due to an ADR, 21.4% of patients admitted actually had an ADR (15). A recent prospective six-month study of 18,820 hospital admissions in England showed adverse drug reactions were responsible for 1225 (6.5%) of the admissions. Of these, 203 (16.6%) were due to drug interactions and 28 (2.3%) were fatal. The authors determined that 72% of all the admissions related to adverse drug reactions were avoidable and may be reduced by regular medication review and involving pharmacists in assessing prescribing behaviour. They also acknowledged that the true community incidence of adverse drug reactions may be at least double that shown in the study when those reactions not resulting in a hospital admission are taken into account (17).

Roberts et al secured funding to survey the medications used in 15 nursing homes in southeast Queensland and northern New South Wales involving 998 residents. The mean number of medications prescribed per patient was 6.6 and the mean number administered was 4.8. They also found that as the degree of incapacity of the resident decreased, so too did the use of both benzodiazepines and psycholeptics (18).

On the basis of the results uncovered in the medication survey, Roberts et al conducted a further study in the same geographical area, involving 52 nursing homes with 3230 residents. This was a randomised controlled clinical trial with clinical pharmacy services (medication review, nurse education and relationship building) as the intervention. The study demonstrated that clinical pharmacy intervention in residential aged care facilities could produce a trend towards reduction in total drug use. A trend towards increased survival of residential aged care facility residents was also found. A significant cost saving in medication alone of \$64 per resident was found, or \$16 per resident net saving after allowing for the cost of the clinical pharmacy service (19). Funding commenced for medication reviews by accredited pharmacists of medications used by nursing home and hostel residents in 1997 (20).

Studies were commissioned by the Commonwealth Department of Health in conjunction with the Pharmacy Guild of Australia (Guild) to explore various models to extend the nursing home medication review program to the home situation. Four studies were funded, which explored similar models, but with subtle differences so that a range of potential models were evaluated (21-24). The final Home Medicines

Review model was developed through a consultative process involving a multidisciplinary steering committee (25).

Hospital discharge procedures in Australia do not link well with community service providers to provide continuity of care and it has been shown that elderly patients who are discharged from hospital have a high risk of readmission (4). An Australian study that investigated the impact of medication review 5 days post discharge for elderly patients discharged from Royal Hobart Hospital found the number of unplanned readmissions was significantly reduced (26). Community nurses care for many patients after discharge from hospital, and therefore can provide a valuable link in the health care continuum from hospital to community. Although medication problems are only one factor involved in hospital readmission, Forster et al (4) found adverse medication events to be responsible for 66% of hospital readmissions and Naunton et al (26) demonstrated the value of medication review.

The Australian Commonwealth Government introduced home Medicine Reviews (HMR) in October 2001 (27). During the first three years of the program to 31 October 2004, 59,397 HMR's had been conducted costing some \$8,315,580 (28). While this appears to be a good uptake of the program, further analysis shows a poor uptake with 12.1 HMR's per pharmacy since the program's inception, or 4.0 HMR per pharmacy per year when averaged across the nation's 4925 pharmacies.

The objectives of the HMR program are to:

- “achieve safe, effective, and appropriate use of medications by detecting and addressing medication-related problem/s that interfere with desired patient outcomes;
- improve the patient's quality of life and health outcomes using a best practice approach, that involves a collaborative effort between the general practitioner, pharmacist, other relevant health professionals and the patient (and where appropriate, their carer);
- improve the patient's, and health professionals' knowledge and understanding about medications; and
- facilitate cooperative working relationships between members of the health care team, in the interests of patient health and well-being.” (29)

There are four basic stages to a HMR:

1. “The identification of patients who may benefit from the review, for example patients:
 - on multiple medications;
 - who have recently been discharged from hospital;
 - with recent and significant changes to their medications; or
 - who are attending a number of different GPs and specialists.

While a review can only be instigated by a GP, the suggestion that a patient might benefit from a review can also come from other health professionals or the patient themselves. The patient consults with their GP, allowing the GP to assess whether a HMR is clinically necessary to ensure quality use of medicines or address the patient's needs. The patient chooses the community pharmacy they would prefer to coordinate the review.

2. The community pharmacy coordinates the review, letting the GP know the arrangements for the review and the contact details of the accredited pharmacist. The accredited or community pharmacist arranges a suitable time to interview the patient, preferably in the patient's own home. The review may be carried out at another location of the patient's choice; however his or her own home is preferable. The interviewing pharmacist conducts the review including an examination of all the patient's medications and related devices. This pharmacist also identifies any issues the patient may have with their medications, for example, compliance, storage and administration techniques. The accredited pharmacist conducts a clinical assessment of the information gathered during the patient interview and writes a report that includes their findings and recommendations.
3. The report is then be discussed with the GP, either face-to-face or by phone, who decides on a course of action.
4. The GP arranges a consultation with the patient to discuss the results and develop a written medication plan for agreement with the patient.” (30)

A randomised controlled trial conducted in America using a similar model to the Australian HMR model in community dwelling geriatric patients was conducted in 1993-95, but only recently published (31). The findings showed a significant dollar saving in the intervention group, but that not all consultant pharmacist recommendations for medication cessation were followed. If all recommendations

had been followed, the savings would have been four-fold those actually recorded. In terms of behaviour change by patients, this study found that patients were unwilling to discontinue psychoactive drugs and generally only accepted advice about medication changes one third of the time. This is more alarming when the patients were informed that their primary care doctor agreed to the changes! The Australian model where the doctor discusses the HMR findings directly with the patient could improve outcomes in this area, but requires evaluation of the current HMR model.

To date, the Australian HMR model has not been evaluated, however the Guild has issued a request for tender to evaluate the HMR program. This evaluation is due for completion in April 2005 with a final report to be submitted to the Guild by June 2005 (32).

Nurse triage

Nurses are widely involved in a range of triage roles throughout the world. The first point of contact for the majority of non-ambulance arrivals at emergency departments is the triage nurse. Nurses are trained to care for patients and can also adopt a gatekeeping role for entry into other medical services. This has been shown to be effective in providing mental health services to people in their own homes in rural communities by District Nurses in the UK (33).

Nurse involvement in triage and gatekeeping appears to be a burgeoning area. The impact of including a specialist nurses in emergency rooms to increase care provided in specialist areas such as mental health or eye problems have been investigated with good results (34-36). Nurse involvement in a Canadian specialist neurology

outpatient clinic and even as gatekeepers for GP services in the UK has also been shown to improve patient contact while filtering out the cases that do not require referral on to the doctor (37, 38). The use of nurses in these roles has reduced costs to the various services over employing the same number of medical specialists, but it is conversely argued that the nurse is providing a triage service – treating those patients he/she can and referring the other patients, as appropriate, to specialist medical care. Using this model, medical services can be used more efficiently (37).

The other consideration apart from economics is patient care. Fremantle hospital in Perth successfully trialled and then implemented a model for inclusion of a mental health triage and consultancy service in their busy emergency room. This program showed improved patient outcomes, and reduced the number of patients, with mental health problems who left the Emergency Department without being seen (35, 36). These results, in conjunction with the District Nurse results in the UK (33) show that both hospital and community outcomes can be improved through the involvement of appropriately trained nurses in a triage/gatekeeper role. These outcomes could be extrapolated to the involvement of community nurses identifying medication problems in their clients in their own homes.

The new push in primary health care is towards utilising nurse practitioners as “the face” of primary care who then refer on to the appropriate service provider including general practitioners. The new horizon of nurse led care is a model causing some angst in medical circles. These frontiers of medical practice are being explored in both the UK and USA from a financial and patient care viewpoint. “Nurse-led care” is the phrase coined in the UK, whereas “collaborative care” is the less

confrontational name used in the USA (39, 40). Whichever label is applied to the model of care, there is greater involvement of nurses in the primary assessment of patients and referral on to appropriate services – triage. Although appropriate training for nurses is identified as a current barrier to this care model, it can be overcome by reviewing educational curricula to encompass the new role. In the same manner, training can expand current nursing roles to identify appropriate patients for HMR and refer on to their general practitioner for assessment and HMR referral as appropriate.

Systems development

The systems implementation literature, especially in the healthcare arena, tends to focus on implementation of information systems. This is the “new frontier” in healthcare and its implementation is an ideal time to review existing processes through the systemisation process. Adding information technology solutions to a flawed system will not improve it (41), but only produce a more cumbersome result. Therefore much of the information system implementation is an exploration onto the deeper system issues in healthcare delivery (42). The primary flaw in a range of these information system implementations was a lack of analysis of the underlying existing healthcare delivery system.

Developing a new system is never an easy task. Careful planning of the system in addition to, or often as part of consultation with stakeholders to build a consensus of the intended direction are important elements. Change is often difficult for people, but maintaining information flow throughout the implementation and adopting a “user view” of the system can help prevent unnecessary angst (43).

User involvement during all phases of system design, development, implementation and evaluation is essential to the success of a system. Failure to include the user viewpoint in any of these phases will result in a system doomed to failure. This is often not caused through a deliberate ploy of users, but rather a system that may be technically perfect, but practically flawed (41, 44). Systems that have the best practical applicability and also management appeal are “simple, frugal and focussed” (45), thus providing ease of implementation and deliverable outcomes. People, however, are not machines and therefore systems involving people and organisations must take into account the complex patterns of cause and effect. While the intervention may only involve a simplistic chain of events, the organisation or people involved in delivering that event(s) are not simplistic. Consequently any change may require redesign of interventions due to time delays and unintended consequences (46).

Chen et al (47) described the use of a model drawing on two theoretical models for developing their framework which was used in one of the HMR implementation trial studies (21). This model draws on the Diffusion of Innovations model and the Linkage model. This framework provides a pathway for development and implementation of new processes in a healthcare arena with a sound basis in the social sciences. Chen’s model defines a stepwise series of main events and provides a system for implementation of new ideas or processes in the healthcare arena (Figure 1).

Implementing a procedural change within one specialty area, for example a nursing care documentation process developed by nurses is a less complex exercise. A process such as this can be designed by nurses with reference to the published

literature and best practice and when implemented produce results (45). However, when designing and implementing a multidisciplinary process involving a range of interest groups (often with their own agendas), the consultative approach is invaluable to obtain engagement from each interest group. This provides a “champion” in each sector represented to support and promote the project, which greatly assists transitional issues during the implementation phase of the process. The “champion” will relate the project back to their specific interest group and through this process builds support for the project within their constituency (48-50).

Chen’s model involves a consultative process in the development of the process and its implementation. Inclusion of stakeholders in the planning and development phases allows incorporation of “real world” input from a range of views and specialist interest areas thus providing a more robust process for implementation.

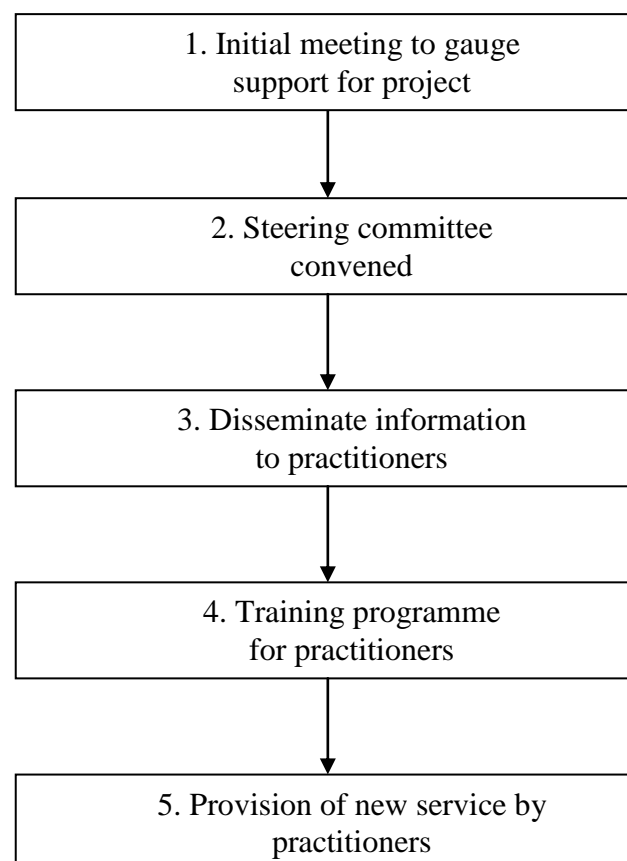


Figure 1 – Intervention model (adapted from (47))

This project is not intended to provide a hard system to be followed verbatim, but rather explore the implementation of a system in a “real world” scenario and monitor the success or otherwise of the implementation. The evaluation is intended to focus on why the implementation worked or not and identify other issues to be addressed to further encourage community nurse requests for HMR referrals.

AIM

Hypothesis: The use of community nurses to initiate requests for HMR referral would facilitate uptake of HMR.

The primary objectives of the project are to:

- Develop a tailored version of the standard request for HMR referral form for community nurse requests for HMR referral;
- Develop a systems based approach for community nurse HMR referral;
- Test this form for ease of use by nurses and general practitioners;
- Measure the degree of uptake of recommendations for HMR from community nurses;
- Measure the effectiveness of the system developed; and
- Identify barriers to uptake of HMR referrals as part of the developed system.

METHOD

Ethics

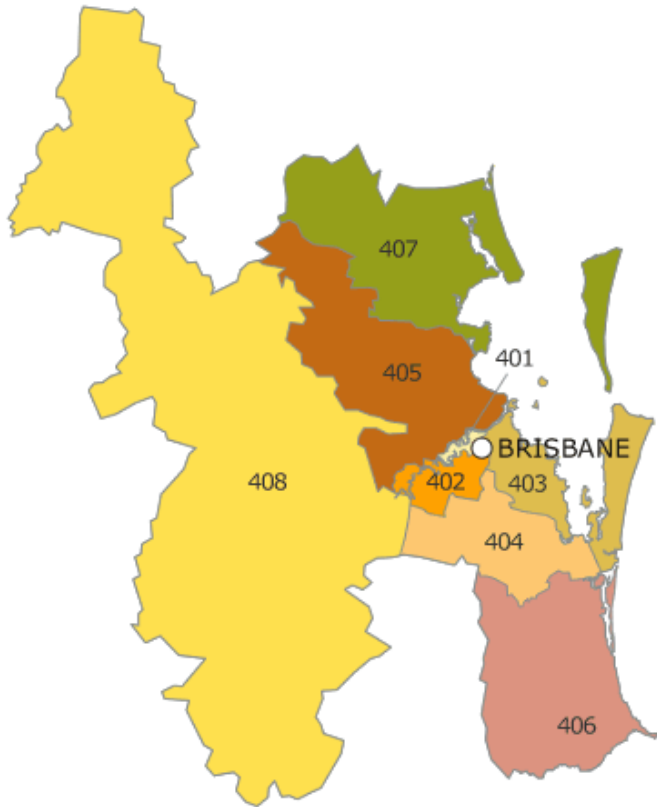
The project methodology was reviewed and approved (including amendments) by the Human Ethics Committee, School of Pharmacy, University of Queensland (Approval number 2004/3) and the Blue Care Research Reference Group (Research proposal reference number 068).

Project site

Blue Care approached BISDIV in 2003 to discuss the best method for Blue Care (registered) nurses to refer clients suspected of having a medication problem to their GP for review. Previously, an ad hoc arrangement was used where the nurse concerned would telephone the doctor and express concern. Blue Care's preferred option was to devise a system whereby nurses would have a procedure to follow. Consequently, BISDIV sought assistance from the University of Queensland (UQ) and two neighbouring Divisions.

Three adjacent Divisions of General Practice (Divisions) in Southern Brisbane involving three Blue Care centres were thus serendipitously selected as the study area:

- Brisbane Inner South (BISDIV) (401), Bayside (403) and Brisbane South (402) Divisions of General Practice (Map 1); and
- Blue Care Wynnum, Manly West and Coopers Plains centres (Map 2).



Map 1. Queensland Divisions of General Practice – Brisbane and surrounding area(51)



Map 2. Blue Care centres – Brisbane city and surrounding areas (52)

These three Divisions combined cover a total of 1093 square kilometres and have 197 member practices with 743 individual general practitioner (GP) members. The Blue Care Centres have a combined total of 51 registered nurses (RNs) and 143 personal carers who visit clients in their own homes every day. Approximately 2700 clients are regularly visited at varying frequencies.

A comparison of the postcodes covered by each collective service is shown in Table 1 with postcode overlap between the Divisions and Blue Care regions highlighted..

Table 1. Comparison of postcodes serviced by the Divisions and Blue Care

Divisions of General Practice			Blue Care			
Brisbane Inner South (BISDIV)	Bayside	Brisbane South	Coopers Plains		Wynnum	Redland Bay
<i>4101</i>	4153	4072	4068	4113	<i>4152</i>	<i>4157</i>
<i>4102</i>	4154	4073	4073	4115	4153	4158
<i>4103</i>	4155	4074	4074	4116	4154	4159
<i>4104</i>	4156	4075	4075	4117	4156	4160
<i>4105</i>	4157	4076	4076	<i>4120</i>	4157	4164
<i>4120</i>	4158	4077	4077	4121	<i>4170</i>	4165
<i>4151</i>	4159	4078	<i>4101</i>	4122	4178	4184
<i>4152</i>	4160	4106	<i>4102</i>	4123	4179	
<i>4169</i>	4161	4107	<i>4103</i>	<i>4151</i>	4270	
<i>4170</i>	4163	4108	<i>4104</i>	4152		
<i>4171</i>	4164	4109	<i>4105</i>	<i>4169</i>		
4172	4165	4110	4106	<i>4170</i>		
	4173	4111	4107	<i>4171</i>		
	4174	4112	4108			
	4178	4113	4109			
	4179	4121	4110			
	4183	4122	4111			
	4184	4152	4112			

(BISDIV – *italics*, Bayside – *outline* and Brisbane South – **bold**)

Study design

The HMR process is well documented elsewhere (30) and was not altered for this project. This project focussed on increasing the number of patients who were identified to their GP by a community nurse for consideration of the benefit of a HMR.

This project was conducted in four main stages (I – IV) (Table 2). Each stage will be described separately.

Table 2. Main stages of the project

I	Stakeholder meetings including representatives from Blue Care, Divisional HMR Facilitators, CEO BISDIV and Bayside Divisions, Queensland HMR Facilitator (Guild), GP representative and the project team convened to determine process issues.
II	Awareness and education of main groups involved in the project – community nurses, GP's and pharmacists.
III	Patient recruitment and tracking of HMR's through Divisions. HMR facilitators in each Division provided prompts for each person involved with the HMR to ensure smooth progress.
IV	Focus groups conducted with each group involved in the project (pharmacists, GP's and Blue Care nurses) to discuss and identify barriers in the project and also general barriers to HMR uptake in the community

Stage I – Stakeholder meetings

Stakeholder committee meetings comprising interested parties from the Divisions, Blue Care and UQ were convened to discuss the project development and implementation.

The stakeholder committee comprised representatives from:

- Divisions;
 - CEO BISDIV and Bayside Division (same person);
 - HMR facilitator BISIDV and Bayside (same person);
 - HMR facilitator Brisbane South Division;
- Blue Care;
 - DON Central Region;
 - DON South Region;
- GP representative;
- Guild (Queensland) HMR facilitator;
- UQ project team;
 - Dr Lisa Nissen (academic supervisor); and
 - Greg Kyle (primary investigator and M.Clin.Pharm candidate).

The role of the stakeholder committee was to provide a sounding board for the practicality in “real life” of the methodology and monitoring processes and also act as “champions for the project” within their constituencies. Multidisciplinary membership was sought to represent the three professional groups involved in the project while also providing representation from key organisations. The Guild Queensland state HMR facilitator was invited to attend to assist in outreach to pharmacists as she is seen as an opinion leader in HMR in Queensland.

The scope and size of the project was discussed at the stakeholder meetings. Inclusion of the two other main community nursing service providers (St. Lukes and OzCare) was considered, but it was decided to limit the size of the project to Blue

Care alone as the Blue Care representatives believed the size of the Blue Care regions would provide the anticipated 50 to 100 requests for HMR referral.

Stage II – Awareness and education

The Blue Care representatives on the stakeholder committee initiated staff awareness of the project at regular staff meetings. The primary investigator provided education sessions at the three major Blue Care centres within the three Divisions of General Practice boundaries (Wynnum, Redland Bay, and Coopers Plains). These sessions included:

- An overview of the HMR process;
- Ethics and Blue Care Research Reference Group approval for project;
- Project aims;
- Project protocols;
- The consent process;
 - Consent form;
 - Consent must be voluntary – no coercion;
 - If the client would prefer to have someone else (trusted person eg. family, friend) read the form before signing, leave it with them; and
 - The client could still have a HMR if they do not want to be part of the study – a “normal” Request for HMR Referral” form would be completed.
- An opportunity for questions about the project and the HMR process in general.

An information pack was provided to each attendee. This pack included a copy each of:

- The existing HMR model (Appendix 1)

- The general project protocol flowchart (Appendix 2);
- RN flowchart (Appendix 3);
- The consent form (Appendix 4);
- The project Request for HMR Referral form (Appendix 5);
- The general Request for HMR Referral form (Appendix 6); and
- A de-identified HMR report previously produced by the author (Appendix 7).

Stage III – Patient recruitment and HMR tracking

Patient recruitment was conducted between April and October 2004. Blue Care staff identified patients at risk of medication misadventure or exhibiting signs of adverse effects. The standard list of prompts listed on the standard Request for HMR Referral form (Appendix 6) was included on the project Request for HMR Referral form (Appendix 5) for the RNs' reference. Personal carers who were concerned about possible medication misadventure by their client(s) were requested to discuss the case with the registered nurse overseeing that client's care. The registered nurse would then assess the case, obtain the client's informed consent using the consent form (Appendix 4) and forward a request for HMR referral form to the GP by fax if (s)he believed there was a potential medication issue warranting further investigation. This step was included to provide consistency in the request for HMR referral process. Thus all requests forwarded to GP's would be initiated by a registered nurse and have professional nursing review.

The total number of clients approached by Blue Care RNs was not recorded since multiple RNs were used to recruit clients over multiple locations and there could be a reasonable chance of error if one or more RNs did not record every client approached.

The protocol developed during the Stage I stakeholder meetings was followed. If follow-up was required with a GP, community pharmacy or accredited pharmacist, it was conducted by the HMR facilitator from the relevant Division. Follow-up comprised a loop pattern at two-week intervals to maintain regular contact and encourage timely completion of the HMR process. The standard HMR process was not altered in any way. The only intervention made in the HMR process was the Divisional HMR facilitators reminding participants (GPs, community and accredited pharmacists) of the timelines and requesting timely progression of study HMR requests/referrals. If any assistance was sought during the HMR process by participants (GPs, community or accredited pharmacists), it was provided by the Divisional HMR facilitator in their normal manner.

All request for HMR referral forms were also faxed to BISDIV to provide a central collection point for project monitoring. The forms for Brisbane South were then forwarded by fax and the forms for Bayside were taken to Bayside by the BISDIV HMR facilitator since BISDIV and Bayside divisions share the same person as their HMR facilitator. BISDIV was chosen as the primary fax point since it was close to the author's workplace and faxed forms could be collected personally to reduce unnecessary fax transmissions with their low, but inherent, privacy risk.

The HMR facilitators from the respective Divisions monitored the progress of the HMR request and ultimately referral as they progressed through the standard HMR process. This provided an additional benefit for the facilitators as they could use project cases to further their role in "evangelising" the HMR concept.

During May 2004, Blue Care identified the requirement for a witness signature on the consent form was difficult to arrange and consequently restricting patient recruitment. The Human Ethics Committee, School of Pharmacy, University of Queensland and the Blue Care Research Reference Group approved an amendment to the study protocol to remove the requirement for signatures to be witnessed. The amended consent form is included at Appendix 8.

A meeting of the two HMR facilitators and the UQ project team was convened in July 2004 to discuss patient recruitment. At this meeting, it was decided to broaden the potential recruitment pool. Both OzCare (formerly St Vincents Nursing) and St. Lukes community nursing were approached by the author to gauge their interest in project participation. Both organisations expressed interest in participating. St. Lukes Ethics Committee reviewed and approved the study protocol. Project timelines and congested training calendars, however, precluded the expansion of the study to include these organisations. Difficulties were experienced arranging meetings with OzCare due to a dearth of mutually available times for meetings between OzCare senior staff and the primary investigator.

Stage IV – Focus groups

Focus groups were convened for each of the major groups involved in the study:

- Blue Care nurses;
- General practitioners; and
- Pharmacists (both community and accredited pharmacists).

It was anticipated that between 5 and 10 attendees would be involved in each focus group to represent some diversity in opinion whilst remaining a workable size.

The focus groups were conducted as a semi-structured discussion with a convenience sample of GPs, pharmacists and Blue Care RNs. All community and accredited pharmacists in the three Divisions were invited to an evening meeting at the Brisbane South Division offices where a light supper was provided. Two GP practice visits were arranged through the HMR facilitator at BISDIV and Bayside Divisions at times mutually convenient for the GPs, facilitator and primary investigator. The Coopers Plains and Wynnum Blue Care centres were visited by appointment with the respective Director of Nursing. Interviews were conducted with a group of RNs at each centre who were available at the time of the visit.

Each profession was interviewed separately and a set of “seeding” questions was developed from issues evident in the literature and tailored to each group (Appendices 9-11).

All focus groups were audio-recorded and generally allowed to be a free flowing discussion of both HMR in general and the project model of community nurse requests to GPs for HMR referral. Seeding questions (Appendices 9-11), tailored to each profession, were used as prompts when discussion broke down. These questions explored attitudes to the project, perceived value of community nurses requesting HMR referral, barriers to the uptake of the model and comments about HMR in general. The general HMR questions explored attitudes to the current HMR model, inter-professional relationships and implementing HMR in practice.

All focus group recordings were transcribed verbatim, shortly after each focus group. Individual transcripts were repeatedly read to provide familiarity with the content. Open coding was completed and emergent themes identified. Recurrent themes were identified across transcripts, as coding was refined.

Each participant was provided with a Double “Gold Class” movie pass as a token of appreciation for his or her involvement in the focus group.

With the exception of the movie passes detailed above, no remuneration was provided to any health professional or patient for participation in the study. Doctors and pharmacists claimed their respective fees from the Health Insurance Commission for HMR as would normally occur outside the study.

RESULTS

Stage I – Stakeholder meetings

Three stakeholder committee meetings were conducted between September 2003 and March 2004.

A flowchart of the overall project process (Figure 2) was developed for distribution to all groups involved in the project. A two-week timeframe was decided as a reasonable timeframe for each stage of the HMR process (GP decision, community pharmacy and accredited pharmacist) to ensure steady progression of the HMR whilst allowing sufficient time for completion of each stage. Flowcharts were also developed to describe the process for each participant in the process – Blue Care

nurses, pharmacists, GP's and the Divisional HMR facilitators (Appendices 3 and 12-14 respectively). The stakeholder committee also acted as champions for the project within their respective professional arena.

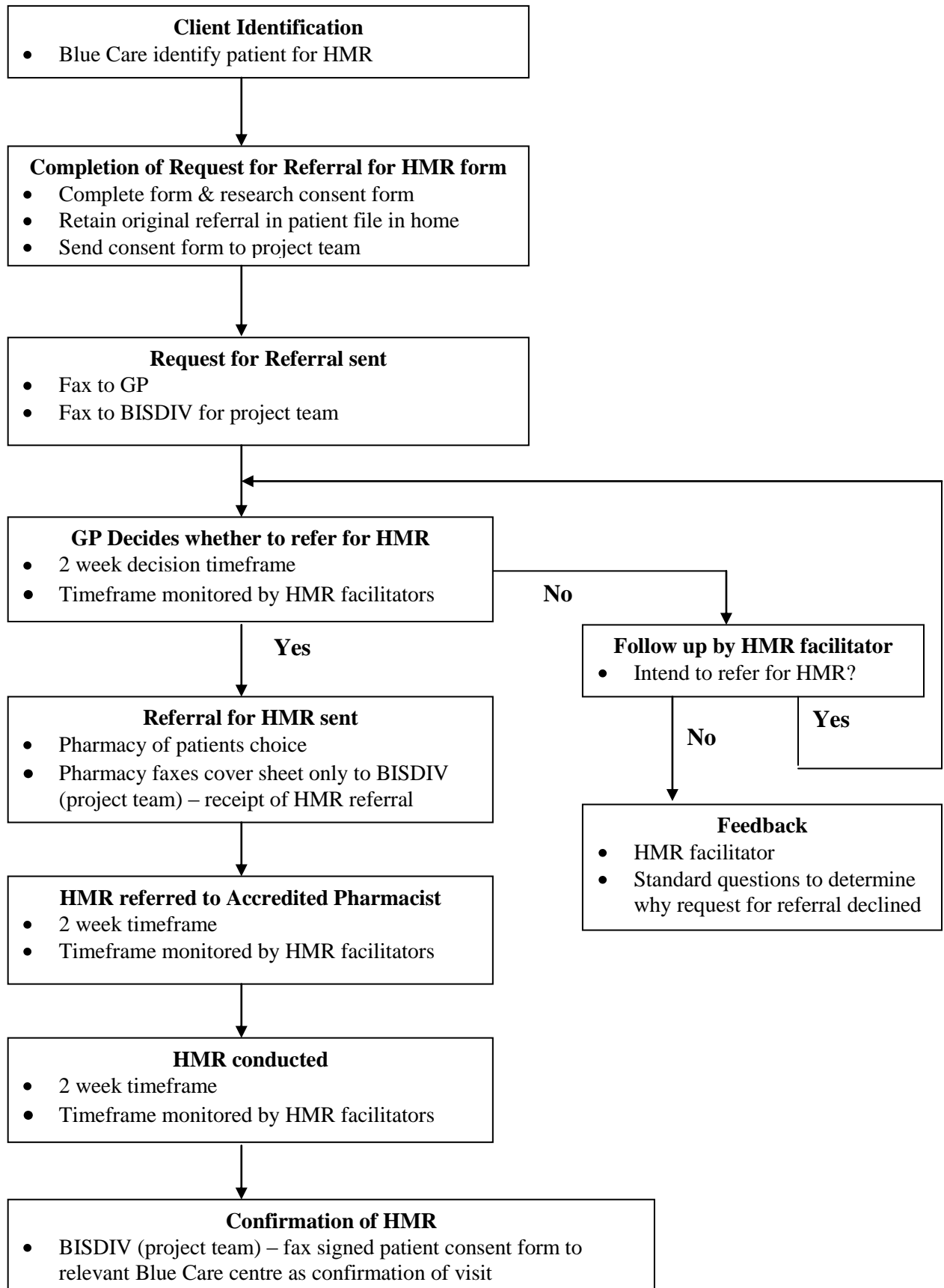


Figure 2. HMR request for referral model agreed by the stakeholder committee

The stakeholder committee assisted with the design of the project Request for HMR Referral Form (Appendix 5). Ready recognition as part of this study and ease of use by Blue Care nurses and GPs were the prime considerations. The standard Request for HMR Referral Form was only slightly modified for this purpose with the logo of each participating group added to ensure differentiation as a project request for HMR referral and alterations in the “From” section. The list of prompts to identify patients at high risk of medication misadventure was retained on the project Request for HMR Referral Form to assist Blue Care nurses.

Recruitment of and gaining consent from Blue Care clients was determined by both the project team and stakeholder committee to be a pivotal role in this project. It was recommended by the project team that consent should be obtained by the Blue Care nurse whom the client knew and trusted rather than by a stranger, such as a member of the project team. The stakeholder committee agreed that the Blue Care nurses would recruit patients and gain consent. Blue Care representatives flagged that the consent form could be a potential barrier to patient recruitment.

Stage II – Awareness and education

The education for Blue Care RNs and personal carers was conducted in mid to late March 2004. The timing of the presentations was arranged to co-incide with a scheduled staff meeting at each centre to attract maximum attendance from Blue Care staff without causing undue inconvenience to rostering. A total of 45 Registered nurses and personal carers attended these sessions. Each session followed the same agenda and a range of questions was answered at the end of the presentation.

Pharmacists and GPs were advised of the project via Division newsletters, weekly faxes and articles included in the Pharmaceutical Society of Australia (PSA), Queensland Branch and Guild monthly bulletins.

Stage III – Patient recruitment and HMR tracking

Five requests for HMR referral were completed and sent to the GP during the seven months of this study. Of these, three (60%) HMR referrals were generated by the GP and sent to the pharmacy. One referral was withdrawn by the GP and two referrals (40%) resulted in a completed HMR. The progress of each case through the HMR process is presented in Table 3.

Patient 1

Patient factors

Patient 1 initially consented to a HMR and then withdrew consent when the initial appointment was made for GP to discuss possible HMR referral one month after the initial request for referral. The GP convinced Patient 1 of the benefits of HMR and consent for HMR was reinstated by the patient and the referral written. When asked by the GP to consider an alternative pharmacy that was approved to conduct HMR, the patient refused and threatened to withdraw consent if the referral was sent to another pharmacy.

Table 3. Patient progress through the study

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
<i>Blue Care Centre</i>	Redlands	Coopers Plains	Wynnum	Wynnum	Coopers Plains
<i>Division of General Practice</i>	Bayside	Brisbane South	Bayside	Bayside	Brisbane South
<i>Date of Request for HMR Referral</i>	16/4/04	29/4/04	1/6/04	10/8/04	26/8/04
GP follow-up required?	Yes	Yes	Yes	Yes	Yes
Date of GP follow up #1	10/5/04	8/6/04	29/6/04	24/8/04	14/9/04
Date of GP follow up #2	14/5/04	6/4/04	13/7/04	-	6/10/04
Date of GP follow up #3	22/6/04	29/9/04	-	-	13/10/04
Did GP refer patient for a HMR?	No	No	No	Yes	Yes
Reason for non-referral (see below)	1	2	3	-	-
Practice visit by HMR facilitator needed?	-	Yes	-	No	No
Date referral sent to pharmacy	14/5/04 (withdrawn 22/6/04)			26/8/04	27/8/04 6/10/04 13/10/04
Date referral received by pharmacy				26/8/04	13/10/04
Pharmacy follow-up required?				Yes	Yes
Number of follow-up calls required				1	3
Pharmacy visit by HMR facilitator needed?				No	Yes
Assistance provided to find accredited pharmacist?				No	No
Date referral sent to accredited pharmacist				30/8/04	2/11/04
Date referral received by accredited pharmacist				30/8/04	2/11/04
Accredited pharmacist follow-up required?				No	Yes
Number of follow-up calls required				-	1
Date HMR completed by accredited pharmacist				24/9/04	5/11/04

Reasons for GP not referring patient for HMR:

1. Pharmacist not approved to provide HMR. GP and pharmacist had previously strained working relationship. Patient adamant that no other pharmacy would perform HMR. GP withdrew referral.
2. Patient moved to another area and GP
3. Not considered clinically necessary by GP – GP conducted medication checks. Patient frequently in hospital (medication checked there)

Pharmacy factors

The community pharmacy selected by the patient was not approved to conduct HMR, and the proprietor was on a 6-week holiday from the pharmacy. The locum pharmacist was reticent to apply for approval to conduct HMR in the proprietor's absence. The HMR facilitator suggested to the GP that referral to another pharmacy could be considered to expedite the HMR process, but the patient refused.

Upon the proprietor's return, the HMR facilitator made contact, and the proprietor advised the facilitator he would pass on the referral to another pharmacy (as per the HMR protocol), if the GP contacted him personally. The proprietor and the GP had a strained working relationship due to previous disagreements and the facilitator felt the proprietor pharmacist was using the HMR referral as leverage for the GP to back down over a previous matter.

GP factors

The GP withdrew the referral due to the unworkable nature of the relationship with the pharmacist and the patient's refusal to use another pharmacy.

Patient 2

Patient factors

Patient 2 visited many GPs and the Blue Care RN found it difficult to find one GP who felt (s)he knew the patient well enough to refer for a HMR. When one of the patient's GPs received the request for referral, he decided the patient would benefit from a HMR, but went on holidays for four weeks before the initial appointment could be made and the referral written. During the time the GP was away, the patient had multiple hospital admissions. The HMR facilitator visited the GP practice twice for follow-up, but before the patient could be

referred by the GP, the patient moved house to another area and changed GP, thus being lost to follow-up.

Patient 3

GP factors

The divisional HMR facilitator contacted Patient 3's GP surgery twice and was assured by practice staff that the GP intended to refer Patient 3 for a HMR. On the third contact, the facilitator contacted the GP directly and was told that the GP did not consider the HMR to be clinically necessary, as the GP had already performed medication checks. Furthermore, the patient was frequently seen in hospital and medication was reviewed there.

Patient 4

GP factors

One GP follow-up call was required where the GP said he had sent the referral. On further checking, the HMR referral had been sent to the Division office in error caused by a misunderstanding of the project protocol. The referral was faxed from the Division office to the pharmacy and the HMR was conducted.

Pharmacy factors

The pharmacy did not fax the referral front page to the Division as per project protocol since the referral was faxed to the pharmacy via the Division office. The HMR proceeded according to the standard HMR process.

Patient 5

Pharmacy factors

The first contact with the GP surgery was through practice staff as Patient 5's GP was on holidays. Practice staff were unable to find any documentation relating to Patient 5's request for HMR referral. The facilitator contacted the pharmacy specified on the request for referral from Blue Care and pharmacy staff were also unable to find any documentation relating to a HMR referral for the patient. Contact was also made with the pharmacy's usual accredited pharmacist who had not received a referral for Patient 5.

When the GP practice was contacted one month later, they informed the facilitator that the referral for HMR for Patient 5 had been faxed to the pharmacy one day after the request for referral was received from Blue Care. The facilitator again contacted the pharmacy to confirm receipt, but this was still denied by the pharmacy. The GP practice was requested to fax the referral to the pharmacy again and complied.

Two weeks later, the pharmacy was telephoned and then visited by the facilitator when they advised they had "misplaced" the referral. The facilitator contacted the GP practice from the pharmacy and requested the referral to be sent for a third time, which was done. The facilitator waited for the referral to arrive through the pharmacy's fax and personally handed it to the pharmacist. The pharmacist said the referral would be sent to the accredited pharmacist urgently.

After a further two-week delay, the pharmacy was contacted again and said they had sent the referral to their usual accredited pharmacist. The accredited pharmacist was on holidays at

the time, but contacted the facilitator four days later to advise the referral had not been received and she would contact the pharmacy for the referral for Patient 5.

In early November, the pharmacy proprietor returned from an extended holiday and worked through the papers in his in-tray only to find three copies of the HMR referral for Patient 5. It was claimed that pharmacy staff placed the faxed HMR referrals in the owner's in-tray for action on his return, hence their "loss". The owner hand delivered the referral to the accredited pharmacist who interviewed the patient the next day and sent her report to the GP 2 days later.

Patient factors

At the interview, the patient remembered the request for HMR referral, but said he was surprised the HMR was still occurring due to the time lapse since it was initially requested.

Time taken at each stage of HMR process

The time taken for the progress of each HMR through the trial process is summarized in Table 4.

Table 4. Time taken to progress through the HMR process (calendar days)

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Mean (Range)
GP Decision	28	154	42	16	1	48.2 (1-154)
CP* to AP[#]	39			4	66	36.3 (4-66)
AP[#]				25	3	14.0 (3-25)

* - Community Pharmacist

[#] - Accredited Pharmacist

Stage IV – Focus groups

The focus group meetings were all conducted in October 2004 towards the end of the study period. The primary investigator attended all focus groups with Divisional HMR facilitators attending wherever possible.

The focus group meetings varied in length from 29 to 105 minutes. The final themes reflect a picture of attitudes towards and opinions about the HMR process and other associated issues.

Blue Care nurses

Two Blue Care focus groups were conducted – one in the Coopers Plains branch office, Brisbane Central Region (29 minutes, 3 RNs) and the other in the Wynnum branch office, Brisbane South Region (43 minutes, 6 RNs). The Brisbane South HMR facilitator attended the Coopers Plains focus group. Participants were selected by the Nurse Manager of the relevant office based on availability at the time of the focus group.

General practitioners

Two focus groups were conducted with general practitioners – one in Bayside (8 GPs, 40 minutes) and the other in BISDIV (2 GPs, 46 minutes). The GP focus groups were conducted at the GP practice during the normal workday at mutually convenient times. The HMR facilitator from Bayside and BISDIV attended both GP meetings. The HMR facilitator also selected the GP practices involved and made appointments for GP focus groups. The practices selected were identified as having a favourable response to the HMR program by the facilitator. This could be expected to bias the resultant themes extracted from these focus

groups. The results show generally positive comments with negative comments predominantly relating to HMR process issues.

Pharmacists

One evening focus group (105 minutes) was conducted in the offices of the Brisbane South Division. All pharmacists within the three Divisions were invited to attend via a flyer sent out by mail and email. Eight pharmacists responded to the invitation and six attended the focus group representing a mix of 2 community and 4 accredited pharmacists. Both divisional HMR facilitators attended the pharmacist focus group.

Emergent themes

Tables 5, 6 and 7 represent the main themes that emerged from the pharmacist, GP and Blue Care RN focus groups respectively. Table 8 summarises the main themes across the groups.

Generally, previous experience across all three professional groups was positive towards the HMR process. Pharmacists found HMR to be a rewarding opportunity to talk with a patient outside the busy pharmacy atmosphere and that there was a chance for the pharmacist to really make a difference for the patient. The GPs felt that the pharmacists were acting in a consultancy role in the provision of HMR and provided useful information regarding herbal and complementary medicines and any potential interactions with drugs. The RNs also believed that HMR was a useful service and there is a great need for extension of HMR service in the community.

All groups accepted the project system as workable. The Blue Care nurses were more reticent in accepting the project model due to the amount of time involved. When it was

explained that many of the time consuming parts of the project system (e.g. patient consent form, multiple faxes to track the HMR) were included only for research purposes, they accepted the “real life” version of the project system would fit their daily work schedule.

The main barriers to uptake of HMR both within and outside this project were identified to be patient perception of the HMR, lack of time for GPs to complete the required paperwork and remuneration for the HMR perceived by GPs to be inadequate and therefore no incentive to generate many HMR. All focus groups agreed that the patient perception of referral to a pharmacist for a medication review is important in increasing HMR uptake. Marketing of the HMR process primarily to consumers, but also health professionals was the main suggestion from both the Blue Care and pharmacist focus groups to increase uptake.

The current HMR model was discussed at the focus groups and some alternatives were suggested, but the pharmacists remained resigned to the Guild controlling the destiny of HMR through community pharmacy. It was suggested that the PSA (as pharmacy’s professional body) should play a larger role in HMR.

Blue Care nurses suggested a list of set criteria or sentinel drugs that could be used to trigger an automatic referral for HMR, but the GPs involved said they would be more likely to act on a specific clinical concern rather than a list of pre-determined criteria.

Table 5. Themes from the pharmacist focus group

Theme	Issue	Comments
HMR experiences	Positive Comments	<p>Improves relationship with GP</p> <p>Opportunity to talk with patient outside busy pharmacy atmosphere</p> <p>Rewarding – chance for pharmacist to make a real difference for patient</p> <p>Practice nurse can be the driver for HMR in a practice</p> <p>Patients see the benefits of talking with the pharmacist</p>
	Negative Comments	<p>Requirement to discuss every report with GP should be changed to when the GP wants clarification on the report</p> <p>Inconsistent quality of referrals – poor handwriting, lack of relevant and recent pathology</p> <p>Concern that HMR is too much work for GPs, therefore most don't refer for HMR</p>
	Remuneration	<p>Remuneration is pretty good considering you don't have to supply a product or sell something</p> <p>No allowance for traveling time</p> <p>No indexation of fee</p> <p>The majority of the fee should go to the pharmacist who actually does the review</p>

Table 5 (continued). Themes from the pharmacist focus group

Theme	Issue	Comments
Barriers to uptake for project	Consent	Some GPs don't advise the patient that the pharmacist will be contacting them Most consent issues sorted out when appointment made One pharmacist traveled 40 minutes to patient's house to have consent for HMR withdrawn
	Patient factors	Patients are often concerned that the pharmacist will find something to reduce their independence Patients request pharmacist not report some information to GP e.g. alcohol intake
	Project system	Good idea RNs are not trained to look for medication related issues and therefore may miss something if it is not obvious Use a standard criteria list for RN requests for referral "RNs don't know what to look for with medication related problems" RN could identify patient to pharmacist for assessment and then pharmacist refers to GP
System improvement	Inter-professional communication	Receive more information from GP More information from a GP allows the pharmacist to provide a more useful report e.g. reason for referral, recent and relevant pathology results. Some GPs need to accept that HMR will uncover information they are not aware of that may improve patient care/outcomes Pharmacist sometimes contacts GP to request HMR, but only if that GP refers for HMR

Table 5 (continued). Themes from the pharmacist focus group

Theme	Issue	Comments
System improvement (cont)	HMR model	<p>“The timeframe is a major problem – it’s too slow”</p> <p>Accredited pharmacists already receive direct approaches for GPs for referral</p> <p>Accredited pharmacists can channel requests to community pharmacies where they are contracted</p> <p>Some GP channeling to certain community pharmacies has occurred</p> <p>The Guild won’t allow HMR to go outside community pharmacy</p> <p>Community pharmacies won’t provide the dispensing history without a financial incentive</p> <p>Having patients sign off on the <i>Claim Confirmation Form</i> has no meaning to the patient – generally explained as “just sign here to say I’ve been here today”</p> <p>The DVA provider card model for medication review service works well</p>

Table 5 (continued). Themes from the pharmacist focus group

Theme	Issue	Comments
System improvement (cont)	Marketing	<p>HMR should be jointly controlled by Guild and PSA, not all to Guild</p> <p>The Guild's only interest is to represent community pharmacy owners</p> <p>PSA involvement would improve standing of HMR in GP's eyes</p> <p>HMR is caught in the current pharmacy/GP "turf war" on pharmacist prescribing</p>
	Patient selection for HMR	<p>A "finders fee" may increase community RN patient identification</p> <p>Automatic request for HMR as part of Blue Care patient "enrollment" process</p> <p>Adopt the UK model, where the NHS will not pay for dose administration aid packing until the patient has had a HMR</p> <p>Take RN on HMR home visit to demonstrate what occurs during HMR and have RN report back to the organization on their observations may increase understanding of benefits of HMR and therefore increase requests for referral</p>

Table 6. Themes from GP focus groups

Theme	Issue	Comments
HMR experiences	Positive Comments	<p>Very useful to tease out issues not known to the GP</p> <p>“Pharmacists are acting as consultants – they’re making suggestions, and they’re good ones”</p> <p>“All information we (GP) can get is helpful”</p> <p>9½ patients out of 10 are happy with HMR</p> <p>Useful to verify compliance and administration technique</p> <p>Pharmacists know about CAM/drug interactions – HMR are useful for this</p>
	Negative Comments	<p>Labour intensive</p> <p>Legal liability if HMR recommendation is not followed?</p> <p>Amount of paperwork and consequently time required is a major problem</p> <p>The second consultation is theoretically only to discuss the HMR report, but the patient sees it just like any other consultation and wants to discuss general issues</p> <p>Rigid HIC requirements for HMR (and other programs) are a big barrier for uptake</p>
	Remuneration	<p>Inadequate remuneration provided for work performed</p> <p>Barrier to increased uptake</p>
Barriers to uptake for project	Consent	<p>One (of two) local pharmacies doesn’t offer HMR – time to convince patient to use other pharmacy for HMR</p>

Table 6 (continued). Themes from GP focus groups

Theme	Issue	Comments
Barriers to uptake for project (cont)	Patient factors	Patient can't understand why GP can't do HMR themselves Distrust GP when GP refers to pharmacist – “why are you sending me to the pharmacist?”
	Project system	Confused when a Blue Care request for referral arrived – not aware a RN could request HMR referral – “I didn't know they (RN) could do this – I needed to check it was OK”
System improvement	Inter-professional communication	Pharmacist should be tactful and not raise patient anxiety – if concerned, contact GP directly If RNs detected a potentially serious problem, they should telephone GP rather than send paper referral (longer delays) If another health professional thinks a patient could benefit from a HMR, this should be communicated directly to the GP, not via the patient
	HMR model	Direct referral would increase the chance of meeting the accredited pharmacist and getting to know them Could refer direct to accredited pharmacist like any other consultant, but community pharmacy(ies) would need to receive a copy of the report Happy to trust community pharmacy to select a good accredited pharmacist If the patient's regular pharmacy doesn't offer HMR, send them to a pharmacy that does Prefer the pharmacist to discuss the report to be face to face in the surgery

Table 6 (continued). Themes from GP focus groups

Theme	Issue	Comments
System improvement (cont)	Marketing	Medical press has been generally positive towards HMR “I have seen the AMA opinions on HMR, but I have made my own opinions”
	Patient selection for HMR	Patients on the “right drugs” who doesn’t seem to be getting better Referral based on a clinical concern, not a list of pre-determined criteria “ I’m happy for Blue Care nurses to contact me if they think there is a problem”

Table 7. Themes from Blue Care RN focus groups

Theme	Issue	Comments
HMR experiences	Positive Comments	Beneficial, good information provided on drugs Great idea and definitely of benefit to clients Fantastic service – huge need for it Most clients are on poly-pharmacy, but even we (RNs) don't know everything they take Blue Care RN's should be identifying clients to GP
Barriers to uptake for project	Consent	Not appropriate to recruit demented clients Client felt overwhelmed with too much information during consent process Clients who consented were generally younger
	Patient factors	Clients believed the GP knew what they were doing Didn't want to be seen to go behind the GP's back HMR was viewed (by client) as something the GP wouldn't support Client felt they were saying the GP didn't know what they were doing with medications “One client thought I (RN) was insulting her GP by asking for a HMR” “Aged people have such faith and trust in their GP – they look at them like a king or God”
	Project system	Amount of information required to be give for consent was time consuming Project was seen as a complicated process in a time poor work environment Simplify request for referral process (form is OK, but what to fax where was confusing)

Table 7 (continued). Themes from Blue Care RN focus groups

Theme	Issue	Comments
System improvement	Inter-professional communication	<p>Sending requests to GP without asking patient consent would probably increase the number of requests for referral</p> <p>“If the GP suggested HMR, more clients would probably consent”</p> <p>Concern that GPs would resist direct communication from RNs</p> <p>History of slow or no response from GPs returning telephone calls, not sending referral letters, etc</p> <p>“Sending HMR request to pharmacist and bypassing GP would speed up the process”</p>
	Marketing	<p>“There should definitely be an advertising campaign for these medication reviews”</p> <p>Pharmacists should promote HMR when people collect their prescriptions</p> <p>“A sticker on medicines like the ones with extra instructions pharmacists use would be a good idea”</p>
	Patient selection for HMR	<p>Include certain criteria for triggering HMR request for referral into Blue Care’s standard referral processes</p> <p>“Could we use the existing Blue Care referral form (Appendix 15). It would reduce number of forms we need”</p> <p>Select some important triggers and sentinel drugs (e.g. warfarin, benzodiazepines)</p>

Table 8. Summary of the main issues across pharmacist, GP and RN focus groups

Theme	Issue	Pharmacists	GPs	Blue Care RNs
HMR Experiences	Positive comments	Good patient benefits	Obtain more information about what patients do in their homes	Fantastic service – needed by most Blue Care clients
	Negative comments	GP workload reducing number and quality of referrals	Very time and paperwork intensive	Nil
	Remuneration	Allowance for travel	Inadequate	N/a
Barriers to uptake for project	Consent	Most issues sorted out when appointment for visit made	Increased time if not sending patient to their regular pharmacy	Clients overwhelmed by information
	Patient factors	Patients concerned about losing independence	Lack of confidence in ability of GPs who refer for HMR	Older patients see it as an insult or checking up on their GP
	Project system	Good idea, but are RNs trained to look for medication issues?	Unsure of HMR and project models	Time consuming and labour intensive
System Improvement	Inter-professional communication	Lack of detail & reason for referral in many referrals from GP	Contact GP directly and use tact with patient	History of GP communication problems, but direct contact would probably increase uptake
	HMR model	Complex, but resigned to the fact it will not change	Direct referral would resolve some time and pharmacy issues	N/a

Table 8 (continued). Summary of the main issues across pharmacist, GP and RN focus groups

Theme	Issue	Pharmacists	GPs	Blue Care RNs
System Improvement (cont)	Marketing of HMR	Joint Guild/PSA initiative	Medical press generally positive	Promote HMR directly to consumers
	Patient selection for HMR	Standardise requests and educate RNs	Based on clinical concern, not standard criteria	Standardized requests using existing forms and sentinel drugs

DISCUSSION

The results obtained from this study initially indicate a disappointing uptake rate of the request for HMR referral project by Blue Care nurses. However, the results also suggest that the reasons behind the low number of requests for HMR referral are more complex than they first appear, and part of the reason for the low uptake may stem from the HMR process itself.

Patient recruitment

The initial number of patients for this study was anticipated to be approximately 50 to 100. Blue Care initially saw a huge potential for a large proportion of their clients to receive a HMR as most were elderly and many take multiple medications. However, Blue Care representatives on the stakeholder committee and RNs at the awareness sessions flagged consent, and in particular the consent form as a potential barrier to recruitment. The gaining of consent is an integral part of any ethical research and subjects should provide informed consent for research to involve their personal information – especially medical information. One major complication of gaining consent is that it can act as a barrier to recruitment and allow selection bias for patients who are willing to provide consent rather than obtaining a true cross-section of the community under study.

Barriers to recruitment

The three main barriers to patient recruitment from the Blue Care focus groups were:

1. The patient's belief in their doctor;
2. Time; and
3. Relatively static numbers of clients in each Blue Care area.

Many patients were reported to believe that their doctor knew what (s)he was doing and they felt a request for a HMR was an insult to their doctor. One RN said “aged people have such faith and trust in the GP – they think of them as a king or God”. The other observation from the RN focus groups was that patients who did accept the offer of a HMR tended to be younger. Both these observations have been reported in the literature (53, 54). Older patients (over 75 years) tended to be less likely to agree to participate in research in a study investigating the effectiveness of pharmacist run medication review clinics, and of the reasons given across all age groups, trust in the GP was a strong factor (54). Another study investigating patient acceptance of pharmacist medication review clinics also found suspicion regarding the pharmacist role and the belief that the doctor could adequately perform the task (53). These factors can be at least partially addressed through marketing the medication reviews directly to consumers to raise awareness and demonstrate the benefits that can be achieved.

Time appears to be the foe of everything in modern life, and Blue Care RNs are no exception. The demand for their services is growing with the ageing population and resources are not growing at the same rate. Therefore, every minute is precious and this study did impose some extra burdens on the RNs, which would not occur in the “real world” situation. Gaining client consent to participate and faxing forms to BISDIV for tracking purposes all took time and were perceived as an inconvenience by RNs and potentially reduced their participation in the study. The benefits resulting from the study were seen as outweighing the time required for the duration of the study, but major concerns were the amount of time involved and the complexity of

the flowchart provided (Appendix 3). Blue Care RNs were reassured that the monitoring and consent issues would not remain after the study concluded and therefore the ongoing request for HMR referral process would be simplified.

Patient pool

Geographically, the study was limited to provide discrete RN, GP and pharmacist populations for the purposes of awareness and education regarding the study process. A major limitation with this approach is that it also limits the potential pool of patients who receive Blue Care services. Initially, the Blue Care RNs approached their clients with enthusiasm, but after a short time, the majority of clients had been approached to participate in the study and the RNs could not continue to pester patients who declined a HMR to reconsider. Anecdotal feedback from the Blue Care DoNs in the two areas involved in the study highlighted this as a major factor in patient recruitment. The only new clients able to be approached for inclusion in the study, therefore, were new referrals to Blue Care.

Awareness of HMR

GPs

Some GPs involved in the focus groups asked for clarification of the HMR model, thus demonstrating a degree of lack of awareness of the HMR model. Once their memory was refreshed, they were able to discuss the HMR process and their impressions of the study protocol. This lack of awareness is not unexpected given the low national uptake rate of HMR (28).

HMR is also only one of a range of health care initiatives involved in the Enhanced Primary Care program where GPs act as gatekeepers. Other initiatives include Care Plans, Health Assessments, Case Conferences, Asthma 3 Plus Plan, Diabetes Annual Cycle of Care and the Mental Health Initiative (55). The plethora of programs currently competing for GP attention and time during a consultation and the amount of paperwork involved in each were raised as concerns at both GP focus group meetings. Consequently, HMR is not always foremost in the GP's mind during each consultation, and the identification of patients who could benefit from a HMR by other health professionals was regarded as a good prompt for GPs.

RNs

Before becoming involved in this project, many of the RNs involved in the focus groups were aware of HMR, but did not know how to request a HMR for their clients. Many talked directly with the client's GP or pharmacist about their concerns, but did not formalise these approaches. The RNs involved in the study felt that HMR would be a benefit for more Blue Care clients, but awareness of HMR by GPs, Blue Care RNs and especially patients were obstacles to overcome.

The main suggestion from Blue Care RNs regarding the lack of awareness of HMR was to increase marketing of HMR directly to consumers. The RNs felt that the medium with the greatest impact, although expensive, would be television advertisements. Other suggestions were the use of posters and brochures in GP surgeries (implying GP endorsement of HMR) and stickers that pharmacists could attach to dispensed medicines of patients taking multiple medicines, low therapeutic index items or having another reason to prompt a HMR. The general opinion

expressed was if consumer demand increased for the service, health professionals would ensure they became aware of the HMR process.

Pharmacists

The general consensus among the pharmacist focus group was that increased marketing of HMR was required, but to GPs as well as consumers. The pharmacists involved in the focus group generally believed that pharmacists were aware of HMR and the processes involved. This was shown to generally be the case in the small sample of HMR followed to completion, albeit highlighting some major process issues in two pharmacies, which will be discussed below.

The pharmacist focus group felt that the PSA should be more integrally involved in promotion of HMR, especially to GPs and other health professionals to ensure HMR is seen as a professional service. At present, only the Guild is involved in HMR promotion and the focus group felt it could be perceived by GPs that the Guild may present an impression of pharmacy owners trying to boost their income. The Guild is the collective body (“union”) for pharmacy owners in Australia. Involvement of PSA was suggested to represent the professionalism of all pharmacists (owners and non-owners) thereby improving the professional standing of HMR in GPs opinions.

Study model

Blue Care initially saw a huge potential for their clients to receive a HMR as most were elderly and many of their clients take multiple medications. However, the stakeholder committee felt that a stranger would have a lower chance of recruitment of an older population into a study; hence the model using the client’s regular RN for

recruitment. In hindsight, a researcher may have had an equal or increased chance of recruitment if more time could be allocated specifically to discussing HMR and study recruitment rather than as an appendage to an already busy visit by the RN. An alternate model for future research could involve a parallel design with a RN recruitment group and a researcher recruitment group and compare the consent and uptake rates between the groups.

Gaining patient consent

The consent form was identified as a potential barrier to recruitment by the stakeholder committee and at the education sessions. The initial version of the consent form (Appendix 4) included a requirement for both the Blue Care client's and RN's signatures to be witnessed. When this was presented at the Blue Care awareness and education sessions, it was immediately identified as a major barrier since most Blue Care clients live alone and only one Blue Care RN visits. Blue Care RNs made a valiant effort to recruit clients, but the witness requirement further restricted clients who could be approached for recruitment into the study. A second version of the consent form without the requirement for signatures to be witnessed received ethical approval as a protocol variation, but did not appear to markedly improve recruitment rates. This could have been due to the reticence of RNs to approach clients who had previously declined inclusion in the study when a witness was required on the consent form.

As previously discussed, gaining of consent is an integral part of any ethical research. However, an argument could be put as to whether this study protocol purely involved audit of the existing HMR process and hence patient consent may not be required. An

ethical debate could ensue as to the need for consent in this context. Undoubtedly, some protocol variations would be required including coding of patients to prevent personal details being passed to those outside the patient's normal care, while retaining the patient's identity for the practitioners involved in the HMR process. The minutiae of his debate are beyond the scope of this paper, but would be worthy of consideration and discussion with the relevant ethics committee if future research were developed using this or a similar model.

HMR process

The protocol of this study did not alter the HMR process (30) in any way; even the request for HMR referral was part of the already implemented HMR process. The rationale for not altering the HMR process was:

- The process was already established and funded;
- Time involved to obtain (HMR) stakeholders endorsement of any changes to the process (e.g. Guild, AMA, Royal Australian College of General Practice, Department of Health and Ageing);
- Ease of implementation of outcomes of this study into practice; and
- Ability to generalise study outcomes.

However, some extra steps were interleaved into the established "real world" HMR model to ensure the project teams awareness of patients recruited and their progress through the HMR process. These were:

- The RN faxing a copy of the request for HMR referral to BISDIV in addition to the GP;

- The GP (or staff) faxing a copy of the first page of the HMR referral to BISDIV when the referral was sent to the pharmacy;
- The community pharmacy faxing a copy of the first page of the HMR referral to BISDIV when the referral was received by the pharmacy; and
- The community pharmacy faxing a copy of the “Confirmation of Home Medicines Review consumer interview” form once the accredited pharmacist completed the HMR.

RNs at the focus groups expressed concern at the extra requirement to fax the request for HMR referral to BISDIV in addition to the GP due to the time involvement. Some also thought the RN flowchart provided (Appendix 3) was confusing and difficult to follow. When the primary investigator explained that the fax to BISDIV was purely for monitoring purposes in the study and the “real world” scenario would only involve a fax to the GP, there was general agreement that this would be a more practical model.

Interprofessional courtesies

One GP in the focus groups was not aware that RNs could request a referral for HMR, but the general consensus was that GPs could obtain useful information from community based RNs (such as Blue Care) to provide better clinical management for patients. Another GP commented that Blue Care could provide a valuable insight into how the patient managed in his or her own home thus adding hitherto unknown information into the clinical picture available to the GP. GPs said they valued input from community nurses and other members of the health care team providing general etiquette regarding interprofessional communication was followed. Many of the GPs

attending the focus groups told of experiences where the patient was given false promises about their eligibility for programs available (not limited to HMR), or the GP was denigrated in front of the patient. Direct interprofessional communication was presented as a solution to this problem, reinforcing the value of the project model where the request for HMR referral form was sent directly from the RN to the GP. In urgent cases, GPs said they would prefer the RN to make contact by telephone to ensure the problem was promptly discussed and a plan of action agreed.

However, RNs in the focus groups felt their contributions to patient care were undervalued by GPs who were slow to return telephone calls (if returned at all) and provided inadequate information in referral documentation for Blue Care services. Pharmacists also felt some reticence on the part of GPs to impart clinical information about patients in HMR referrals, such as recent pathology, list of diagnoses, etc. Interprofessional respect and communication is an emotive arena where negative personal experiences and anecdotes abound. Professional bodies may need to work more closely to enhance relationships and build mutual trust between health professionals as partners in patient well being, rather than the historical hierarchical model as HMR expands as a multi-disciplinary model.

Potential process changes

Pharmacists expressed concern at the skill base of RNs to reliably detect medication related problems. It was not the aim of this study to expect, train or equip Blue Care RNs to become experts in identification of every medication related problem (actual or potential) their clients may be experiencing. Neither is it the aim of the established request for HMR referral in the standard HMR process. The ability for anyone

(health professional or not) to request a HMR based on a suspicion that a person's medication(s) may be causing a problem in daily life is a strength of the HMR process. It is the GP who determines potential causality and considers whether a HMR is warranted to further investigate the medication related problem.

The pharmacist focus group suggested that the project protocol could be altered to have the RN identifying the patient to the community pharmacist for review. If the community pharmacist felt the problem identified was medication related, then a request for HMR referral could be forwarded to the patient's GP. This suggestion has the community pharmacist acting as a triage point for clients identified by RNs as having potential medication problems. While it may appear ideal, especially given the workload and other demands on GP time, it does provide an extra step (and potential delay) in the HMR process while the GP still remains the gatekeeper of the HMR process. Given the delay times found during this study, inclusion of an extra step in an already slow process may only serve to add further delays and therefore disadvantage the patient.

A complementary suggestion was made at one of the RN focus groups where it was suggested that RNs should be able to bypass the GP and refer directly to the pharmacist (community or accredited not specified) for HMR. Changing the HMR process to this model would remove the major time consuming stage found in the HMR process during this study (GP decision – average 48 calendar days). Given the growing trend towards nurse practitioners (39, 40, 56), this could be a model for further investigation in the future, but community nurses such as Blue Care may not have the patient's full medical history available, and therefore a proportion of the

HMR referrals made using a nurse referral model may be inappropriate. It could also be argued that a proportion of GP HMR referrals are inappropriate, but appropriateness of HMR referral was outside the bounds of this study.

HMR model

When considered from a systems viewpoint the established HMR process used in this study contains three main wait points with other minor wait points interspersed:

1. The GP decision whether or not to convert a request for HMR referral from a RN into a HMR referral;
 - Time for the GP to see the request for HMR referral faxed from the RN;
 - Time and method (fax, mail, given to patient) for a referral to be sent to the community pharmacy;
2. The community pharmacist actioning the HMR referral by either sending an accredited pharmacist staff member to conduct the review or passing the referral to a contracted accredited pharmacist;
 - Time for the community pharmacist to see the request for HMR referral sent from the GP;
 - Time and method (fax, mail, hand delivered) for the referral to be sent to the accredited pharmacist;
3. The accredited pharmacist conducting the HMR; and
 - Time and method (fax, mail, given to patient) for the report to be sent to the community pharmacy and GP.
 - Community pharmacist preference for report delivery direct to GP (more efficient) or via community pharmacy (less efficient).

HMR timeframe

The three main wait points monitored through this study showed delays well in excess of the 14 calendar days allocated as the time for each stage by the stakeholder committee during the initial stages of the study. Allowing the maximum 2 weeks for each major stage in the HMR process, a total of 6 weeks (or 1½ months) would elapse between the Blue Care RN requesting HMR referral and the HMR being conducted and report sent back to the GP. Using the mean times found in this study, this time would be 98 days, or 14 weeks (over 3 months) – more than double the time allocated for timely completion of a HMR in this study. Indeed, the only group that achieved the target 14 day timeframe was the accredited pharmacists (14 days). The mean results obtained from this study may not be able to be generalised since both the GP decision and community pharmacy sample sizes are only 5 and 2 respectively and each contain one extreme value potentially skewing the results.

Notwithstanding the small sample size, these results are concerning. Patients who are identified for HMR are at potential risk for medication misadventure. Time is a crucial factor in assessing these patients by all members of the healthcare team to ensure any potential risk to the patient is minimised. Therefore procedures should be instituted by GPs, community and accredited pharmacists to ensure HMR requests and/or referrals are dealt with in a timely manner. Four GPs (80%) required longer than the allocated 14 days deciding whether or not to refer the patient for a HMR and three required longer than twice the allocated time (28 days or more). These data indicate that GPs may not consider a request for HMR from a community RN a high priority in the care of a patient. However, a significant proportion of the time taken may have been from the minor delays above – a delay in the GP seeing the faxed

request for HMR referral, or in sending the HMR referral to the community pharmacy.

Continuity of care

One major factor in delays in the HMR process found during this study was the lack of planning for continuity of patient care when health professionals took holidays. In the case of Patient 1, the community pharmacy proprietor was away when the HMR referral arrived. Understandably, the locum would not submit the forms for HMR approval of the pharmacy, but the HMR protocol, which requires an unapproved community pharmacy to refer the HMR to an approved pharmacy, was not followed. Patient 2's GP decided to refer for a HMR, but left on 4 weeks holiday before writing the referral. If the referral had been written before departure, the HMR report may have been waiting for the GP on his return from holidays. Instead, the GP returned to find the patient had multiple hospital admissions during his absence and moved to another area shortly after his return. It is not known if the hospital admissions were related to medication issues. The community pharmacist proprietor for Patient 5 was also on holidays and staff placed all faxes that arrived in the pharmacy in his "in tray". The pharmacy manager did not appear to see the faxed HMR referrals, and even when the divisional HMR facilitator waited in the pharmacy, collected the HMR referral from the fax and handed it to the manager; it was still placed in the proprietor's "in tray"!

Model alterations

Suggestions for improvements to the HMR model were sought at each focus group. All focus group participants felt the community pharmacist has an important role to

play in medication management. The main model change suggested by the RN focus groups was RN initiated HMR as previously discussed. A direct RN to pharmacist referral model would have the benefit of bypassing the step in the HMR process found to be the most time consuming – the GP decision. The major limitation of this model is awareness of the patient’s medical history. Anecdotally, most patients appear to have a regular (or main GP) who is aware of their medical history. This history can contain valuable background information for a HMR that may not be available to the RN and/or community pharmacist.

The pharmacist focus group was generally resigned to the fact that the HMR model would never move away from community pharmacy while HMR remain controlled by the Guild. It was felt the model might be a little more liberal if the PSA was involved, but the consensus was the Guild would never (voluntarily) relinquish control of HMR. Most pharmacists believed that the accredited pharmacist (even if an independent contractor) should present him or herself as being on staff at the community pharmacy that received the referral – including letterhead used in reports, etc; hence reinforcing the community pharmacy “ownership” of the HMR process. There was, however, a small degree of support for a direct referral model (where the GP refers directly to the accredited pharmacist), but no confidence it would ever come to fruition.

GPs, however, felt a direct referral model may improve communication and relationships between accredited pharmacists and GPs, with the proviso that community pharmacists were informed of HMR outcomes. GPs at the focus groups regarded HMR as a referral for a specialist opinion and see the specialist as the accredited pharmacist. It was generally believed that a direct referral model would

increase visits to GPs by accredited pharmacists and allow discussion of GPs aims and needs from HMR reports.

The other main difficulty GPs found with the current HMR model is the rigid HIC requirements that during the pre- and post-HMR consultations, only items relevant to the HMR should be discussed. GPs lamented that patients do not see this distinction and view the visit as any other visit to the doctor where any of their medical concerns can be discussed. It also needs to be remembered that many HMR recipients are elderly (especially the Blue Care client group) and therefore may have difficulty getting to the GP, hence the “omnibus” consultation. GPs attending the focus groups found it difficult to limit these consultations solely to HMR matters. Consequently, there was insufficient time to adequately discuss the HMR outcomes and develop a medication management plan. Furthermore, HIC rules do not allow a “normal” consultation to be billed adjacent to a HMR consultation to accommodate patient needs.

Remuneration

Remuneration was a major concern for GPs with unanimous agreement from the GP focus groups that the current remuneration offered (full fee: \$128.75, bulk billing: \$109.45 (57)) was inadequate for the work performed by the GP in a HMR. The amount of paperwork required appeared to be the largest single barrier to increased HMR referral from the GP perspective. Pharmacists at the focus group generally felt that remuneration was adequate for the tasks performed, but would like to see the pharmacist fees indexed annually in a similar manner to the GP payments. The lack of a travelling allowance or fee for pharmacists is an impediment to accredited

pharmacists travelling to visit some patients in their home. Given this study was conducted in a capital city, this barrier to HMR uptake would only be magnified exponentially in regional, rural and remote areas.

The retail background of many pharmacists was evident in the discussion regarding remuneration with comments such as “(the) remuneration is pretty good considering you don’t have to supply a product or sell something”. It appears that pharmacy still has some way to travel down the cognitive services path, where remuneration for professional knowledge rather than for a supply or retail function, is an accepted mindset by pharmacists at the “grass roots” level. The Guild and PSA may find it difficult to convince government, other professions and the public of pharmacy’s potential to deliver cognitive services if the pharmacy profession does not first accept this concept.

Patient identification for HMR

A major misconception with the HMR request for referral form (original) is the list of prompts for triggering a HMR is seen as a set of criteria that must be met. This issue was raised at each focus group meeting where the “HMR criteria” were discussed. The HIC rules for claiming Item 900 services (HMR) state, “A medical practitioner must assess that a DMMR (HMR) is clinically necessary to ensure quality use of medicines or address patient’s needs. Examples of risk factors known to predispose people to medication related adverse events are...(list as per HMR request for referral form)” (57). Furthermore, the GP Guidelines produced by the Commonwealth Department of Health and Ageing includes “The above examples (list as per HMR request for referral form) serve as a guide for determining eligibility of patients for

DMMR, however this list is not exhaustive. For example, a patient may be eligible for a DMMR because of a change in circumstances, such as loss of a spouse who was principally responsible for medication management within the home.” (58)

The Guild through the MMR facilitator scheme has been attempting to educate health professionals involved in HMR that the list of prompts are exactly that – suggested triggers which can be considered as placing the patient at increased risk of medication misadventure. However, it appears that this message has not reached practitioners who are looking at the triggers as criteria that must be met. The practitioner’s job is also made easier if the list presented is of hard and fast criteria, since it is a case of finding an appropriate criterion and selecting it. HMR is more patient focused than this and includes “other” as a valid option whereby none of the listed triggers may apply to the patient, but there still may be a risk of medication misadventure and hence a valid reason for HMR. More work is required in the marketing of HMR to health professionals to ensure that the triggers listed are not seen as a criteria list.

Future development

A direct referral model would provide many benefits to the HMR process and therefore ultimately the patient. Personality conflicts would be avoided since GPs would refer to accredited pharmacists with whom they had a good working relationship. This would avoid the patient's quality of care being "held to ransom" as occurred with Patient 1. The wait time involved in the community pharmacist "processing" the HMR referral, found in this study to average 36 days, would also be removed. This change would reduce the time between referral and report and avoid a hiatus in the HMR process as shown in the cases of Patients 1 and 5.

Accredited pharmacists would market their services directly to GPs, thus achieving a twofold benefit:

1. developing a rapport with GPs and therefore offer HMR reports tailored to the requirements of the individual GP or practice; and
2. increasing GP awareness of HMR through marketing of their services to GPs.

The current model provides no incentive for this extra "free" marketing to occur as accredited pharmacists receive no gain for their efforts if patients choose a community pharmacy where the accredited pharmacist does not work. Another benefit would involve GPs being able to refer to a range of accredited pharmacists depending on their special interests (eg. cardiovascular, diabetes, etc). GPs could refer patients with a specific problem or area of concern to an accredited pharmacist known to have an interest or specialist knowledge in that practice area. Such sub-specialisation could provide further patient benefits.

Potential disadvantages of direct referral include the potential for allegations of inducements provided to GPs to channel patients to a particular accredited pharmacist.

A direct referral system would be no different to the system currently used to refer patients to other medical and paramedical specialists. Furthermore, community pharmacists could offer inducements for GPs to channel patients in the current model since there appears to be a lack of general patient awareness of HMR and consequently the model of using the patient's preferred community pharmacy.

Removal of the community pharmacist from the HMR process is not in the best interests of the patient or the HMR process. Community pharmacist inclusion in HMR was also believed to be beneficial by all groups involved in this study. If direct referral were to be implemented, the community pharmacist (in fact all the community pharmacists used by the patient) would require a copy of the report sent to the GP. Currently, only the community pharmacy that receives the HMR referral receives a copy of the report. Ensuring all pharmacists involved in the patients care are equally informed about the HMR could improve patient outcomes through quality use of medicine. Future research could investigate the efficiency, patient outcomes and health professional and consumer acceptance of alternative HMR models compared with the current model. A proposed direct referral model is at Appendix 16.

Other avenues for future research could be expansion of the catchment population to include HMR requests for patients on discharge from hospital, with patient identification by hospital ward pharmacists. Many Blue Care clients are hospitalised and comparisons may be able to be drawn between uptake of requests for HMR between those initiated by RNs and pharmacists.

The current study model concentrated on three Divisions in a capital city and therefore does not represent a true cross-section of the Australian population and consequently results may not be able to be generalised outside a capital city population. Further research utilising a similar model comparing city, regional, rural and remote populations could provide a greater insight into uptake of HMR requests for referral and general HMR issues across a more representative sample of the Australian community.

Awareness and marketing of HMR were issues both raised during and arising from the focus groups. Market research targeting health professionals and also consumers may identify further barriers to HMR uptake. It may also provide innovative solutions from the relevant target populations to overcome any barriers identified.

The HMR program has been in operation for three years, but remains in its infancy with much untapped potential. It is hoped that future research can improve access to and uptake of this beneficial initiative.

CONCLUSION

Increasing the rate of HMR uptake through requests for referral from community nurses appears to be an easy task. Community nurses appreciate that polypharmacy can contribute to increased morbidity in their client population. However, translating theory into practice was more difficult than anticipated. Client resistance to HMR was an unforeseen barrier uncovered during this study which can be addressed through a consumer awareness and education program about the HMR process and its benefits.

All professions represented in this study agreed with the benefits of HMR and supported community RN initiated HMR requests. Although only five RN initiated requests for HMR referral were received during the study period, a range of process issues were identified within the existing HMR model. The overall completion of HMR's appeared to be unnecessarily prolonged by process issues within the GP practices and community pharmacies. Patients referred for a HMR are already determined to be at risk of medication misadventure and prolonging the time for completion of the HMR process can potentially increase this risk.

The main barrier to increased uptake of HMR found within the study protocol was obtaining patient consent for the RN to request a HMR referral from the patient's GP.

Focus groups identified the main barriers to increased HMR uptake in general to be:

1. patient awareness of HMR;
2. the amount of time taken for the GP to complete the HMR process;
3. competing government programs; and
4. GP remuneration.

It is hoped that further research into HMR awareness and fine tuning of the HMR process can tailor the current HMR model. The ideal outcome is a system that is widely recognised by health professionals and consumers to improve patient outcomes whilst seamlessly interleaving into everyday practice.

References:

1. Safety First. Report to the Australian Health Ministers' Conference 2000: Australian Council for Safety and Quality in Healthcare, May 2000.
2. Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safer health system. Washington DC: Institute of Medicine; 1999.
3. Department of Health. An organisation with a memory. London: Department of Health; 2000.
4. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med* 2003;138(3):161.
5. Australian Bureau of Statistics national regional profile cat. no. 1379.0.55.001. In: Australian Bureau of Statistics
[www.ausstats.abs.gov.au/Ausstats/free.nsf/Lookup/FCEB37BFC48EA001CA256E6D008370D6/\\$File/NRP_0.xls](http://www.ausstats.abs.gov.au/Ausstats/free.nsf/Lookup/FCEB37BFC48EA001CA256E6D008370D6/$File/NRP_0.xls) accessed 8 June 2004.
6. Ageing in Australian Society. Report to the Second World Assembly on Ageing Madrid, Spain, April, 2002. In: Department of Health and Ageing
www.ageing.health.gov.au/ofoa/agepolicy/ageinaust/aiasbk4.htm#9 accessed 8 June 2004.
7. Pillans PI, Roberts MS. How to optimise use of medications in the elderly. *Medicine Today* 2001;2(4):60.
8. Roughead EE. The nature and extent of drug-related hospitalisations in Australia. *J Qual Clin Pract* 1999;19:19-22.

9. Cunningham G, Dodd TRP, Grant DJ, McMurdo ET, Richards RME. Drug-related problems in elderly patients admitted to Tayside hospitals, methods for prevention and subsequent assessment. *Age Ageing* 1997;26:375-382.
10. Gosney M, Tallis R. Prescription of contraindicated and interacting drugs in elderly patients admitted to hospital. *Lancet* 1984(September 8):564-567.
11. Lazarou J, Pomeranz B, Corey P. Incidence of adverse drug reactions in hospitalized patients. *JAMA* 1998;279(15):1200-1205.
12. Morris CJ, Cantrill JA, Hepler CD, Noyce PR. Preventing drug-related morbidity--determining valid indicators. *Int J Qual Health Care* 2002;14(3):183-98.
13. Olivier P, Boublès O, Tubery M, Lauque D, Montastruc J, Lapeyre-Mestre M. Assessing the feasibility of using an adverse drug reaction preventability scale in clinical practice - a study in a French emergency department. *Drug Safety* 2002;25(14):1035-1044.
14. Pouyanne P, Haramburu F, Imbs JL, Begaud B, for the French Pharmacovigilance Centres. Admissions to hospital caused by adverse drug reactions: cross section incidence study. *BMJ* 2000;320(7241):1036.
15. Lagnaoui R, Moore N, Fach J, Longy-Boursier M, Begaud B. Adverse drug reactions in a department of systemic diseases-oriented internal medicine: prevalence, incidence, direct costs and avoidability. *Eur J Clin Pharmacol* 2000;55:181-186.
16. Manesse CK, Derkx FHM, De Ridder MAJ, Man in 't Veld AJ, van der Cammen TJM. Contribution of adverse drug reactions to hospital admission of older patients. *Age Ageing* 2000;29:35-39.
17. Pirmohamed M, James S, Meakin S, Green C, Scott AK, Walley TJ, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *BMJ* 2004;329(7456):15-19.

18. Roberts MS, King M, Stokes JA, Lynne TA, Bonner CJ, McCarthy S, et al. Medication prescribing and administration in nursing homes. *Age Ageing* 1998;27:385-392.
19. Roberts MS, Stokes JA, King MA, Lynne TA, Purdie DM, Glasziou PP, et al. Outcomes of a randomized controlled trial of a clinical pharmacy intervention in 52 nursing homes. *Br J Clin Pharmacol* 2001;51(3):257-265.
20. King MA, Roberts MS. Multidisciplinary case conference reviews: improving outcomes for nursing home residents, carers and health professionals. *Pharm World Sci* 2001;23(2):41-45.
21. Bennett A, Smith C, Chen T, Johnsen S, Hurst R. A comparative study of two collaborative models for the provision of domiciliary medication review (St George medico/pharmacy project). 2000.
22. Krass I, Smith C. Final report of cost analysis of medication management reviews. 2000.
23. Sorensen L, Stokes JA, Purdie DM, Woodward M, Elliott R, Roberts MS. Medication reviews in the community: results of a randomized, controlled effectiveness trial. 2004.
24. Gilbert AL, Roughead EE, Beilby J, Mott K, Barratt JD. Collaborative medication management services: improving patient care. *MJA* 2002;177:189-192.
25. Medication Management Implementation Steering Group. Framework document for domiciliary medication management reviews: Department of Health, Commonwealth of Australia; 28 February 2001.
26. Naunton M, Peterson GM. Evaluation of Home-Based Follow-Up of High-Risk Elderly Patients Discharged from Hospital. *J Pharm Pract Res* 2003;33(3):176-182.

27. Home Medicines Review, updated 15 Dec 2003. In: Department of Health and Ageing, Australia, www.health.gov.au/epc/dmmr.htm , accessed 25 May 2004.
28. National HMR Uptake, updated November 2004. In: Pharmacy Guild of Australia, Australia, www.guild.org.au/public/dmmrfiles/statcumulnat.pdf , accessed 23 November 2004.
29. About Home Medication Review, Updated 11 Nov 2003. In: Health Insurance Commission, Australia, www.hic.gov.au/PROVIDERS/incentives_allowances/pharmacy_agreement/about_hmr.htm#1 , accessed 25 May 2004.
30. Home Medicines Review (2), updated 15 Dec 2003. In: Department of Health and Ageing, Australia, www.health.gov.au/epc/answers.htm , accessed 25 May 2004.
31. Williams ME, Pulliam CC, Hunter R, Johnson TM, Owens JE, Kincaid J, et al. The Short-Term Effect of Interdisciplinary Medication Review on Function and Cost in Ambulatory Elderly People. *J Am Geriatr Soc* 2004;52(1):93-98.
32. Request for Tender: Evaluation of the Home Medicines Review (HMR) Program. In: Pharmacy Guild of Australia, Australia, www.guild.org.au/public/researchdocs/rft_hmr_eval.pdf , accessed 15 September 2004.
33. Lauder W, Reynolds W, Reilly V, Angus N. The role of district nurses in caring for people with mental health problems who live in rural settings. *J Clin Nurs* 2001;10(3):337-44.
34. Buchan JC, Saihan Z, Reynolds AG. Nurse triage, diagnosis and treatment of eye casualty patients: a study of quality and utility. *Accid Emerg Nurs* 2003;11(4):226-8.

35. Wynaden D, Chapman R, McGowan S, McDonough S, Finn M, Hood S. Emergency department mental health triage consultancy service: a qualitative evaluation. *Accid Emerg Nurs* 2003;11(3):158-65.
36. McDonough S, Wynaden D, Finn M, McGowan S, Chapman R, Hood S. Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accid Emerg Nurs* 2004;12(1):31-8.
37. Charles-Jones H, May C, Latimer J, Roland M. Telephone triage by nurses in primary care: what is it for and what are the consequences likely to be? *J Health Serv Res Policy* 2003;8(3):154-9.
38. Letourneau MA, MacGregor DL, Dick PT, McCabe EJ, Allen AJ, Chan VW, et al. Use of a telephone nursing line in a pediatric neurology clinic: one approach to the shortage of subspecialists. *Pediatrics* 2003;112(5):1083-7.
39. Resnick B, Bonner A. Collaboration: foundation for a successful practice. *J Am Med Dir Assoc* 2003;4(6):344-9.
40. Richardson A, Cunliffe L. New horizons: the motives, diversity and future of 'nurse led' care. *J Nurs Manag* 2003;11(2):80-4.
41. Simpson RL. When bad implementations happen to good systems. *Nursing Management* 2002;33(11):12.
42. Lau F, Herbert M. Experiences from health information system implementation projects reported in Canada between 1991 and 1997. *J End User Comp* 2001;13(4):17.
43. Adler MS. Avoiding the perils of imaging system implementations. *Information Management Journal* 2000;34(4):4.
44. Coe LR. Five small secrets to systems success. *Information Resources Management Journal* 1996;9(4):29.

45. Huffman MH, Cowan JA. Redefine care delivery and documentation. *Nursing Management* 2004;35(2):34.
46. Wilkinson D. Whole system development - rethinking public service management. *Int J Publ Sect Mmt* 1997;10(7):505.
47. Chen TI, Crampton M, Krass I, Benrimoj SI. Collaboration between community pharmacists and Gps in innovative clinical services - a conceptual model. *J Soc and Admin Pharm* 1999;16(3/4):134-144.
48. McNish M. Guidelines for managing change: A study of their effects on the implementation of new information technology projects in organisations. *Journal of Change Management* 2002;2(3):201.
49. Victor P, Franckeiss A. The five dimensions of change: an integrated approach to strategic organizational change management. *Strategic Change* 2002;11(1):35.
50. Mento AJ, Jones RM, Dirndorfer W. A change management process: Grounded in both theory and practice. *Journal of Change Management* 2002;3(1):45.
51. Maps of Queensland Divisions (Queensland Divisions - Brisbane and Surrounding Area). In: Queensland Divisions of General Practice (QDGP), Queensland, Australia, www.qdgp.org.au/index.php?action=view&view=754&pid=0 accessed 13 October 2004.
52. Blue Care centres and services. In: Blue Care, Australia, www.bluecare.org.au/centreservices/map/map_brisbane.cfm accessed 13 October 2004.
53. Petty DR, Knapp P, Raynor DK, House AO. Patients' views of a pharmacist-run medication review clinic in general practice. *Br J Gen Pract* 2003;53(493):607-613.

54. Petty DR, Zermansky AG, Raynor DK, Vail A, Lowe CJ, Freemantle N, et al. "No thank you": why elderly patients declined to take part in a research study. *Pharm World Sci* 2001;23(1):22-27.
55. Roberts J. Personal communication (email) "HMR Project". Received 19 November 2004.
56. Parish C. The future of primary care. *Nurs Stand* 2003;17(26):12-3.
57. Medicare Benefits Schedule, updated 1 November 2004. In: Department of Health and Ageing, Australia,
www.health.gov.au/pubs/mbs/mbsnov03/MBSNov2003_DHTML/MBS_Book_1_November_2003_62.htm , accessed 18 November 2004.
58. Domicillary Medication Management - Home Medicines Review, available at:
[www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-epc-dmmr.htm/\\$FILE/dmmrguidelines.pdf](http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-epc-dmmr.htm/$FILE/dmmrguidelines.pdf). Canberra: Commonwealth of Australia; 2001.